

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

OPSANUS ASTRIFER, A NEW TOADFISH FROM
BRITISH HONDURAS¹

BY C. RICHARD ROBINS AND WALTER A. STARCK II
Institute of Marine Science, University of Miami

Introduction and Acknowledgments

In June, 1961, the junior author accompanied Mr. and Mrs. E. N. Belcher, Jr., and party on a cruise on the yacht *PIOUS PUFFIN* and made a series of collections of reef fishes along the Caribbean coast of Central America. Among the many interesting fishes collected was the new toadfish (Batrachoididae) described below. We are indebted to the Belchers for making this trip possible and to Leonard P. Schultz and Ernest A. Lachner for aid during our various visits to the United States National Museum. Mrs. Priscilla R. Holland prepared the histological sections.

Opsanus astrifer, new species

Starry toadfish

(Figures 1-2, Table 1)

Holotype: USNM 259421-F1, an adult female, 232 mm standard length, collected at Turneffe Island, British Honduras, 200 yards ESE of Cay Bokel in a coral cave in 15 feet, 30 June 1961, by W. A. Starck II and E. N. Belcher III (field number: WAS-Carib-17).

Paratypes: UMML 9415 (1, 73 mm) and ANSP 102736 (3, 24-32 mm) collected with the holotype.

Diagnosis: A large species of *Opsanus* of dark brown color with numerous small white protuberances on the head and body. Fin-ray formula: D—III, 30-32, A—24-25, P—22-22, V—I, 2; Vertebrae—37-39. Body scaleless.

Description: Counts and measurements of the type specimens are given in Table 1. There are two rays and one short concealed spine in the pelvic fin. The anterior ray is thickened and provided externally with a fleshy rugose pad.

¹Contribution No. 650 from The Marine Laboratory, Institute of Marine Science, University of Miami.

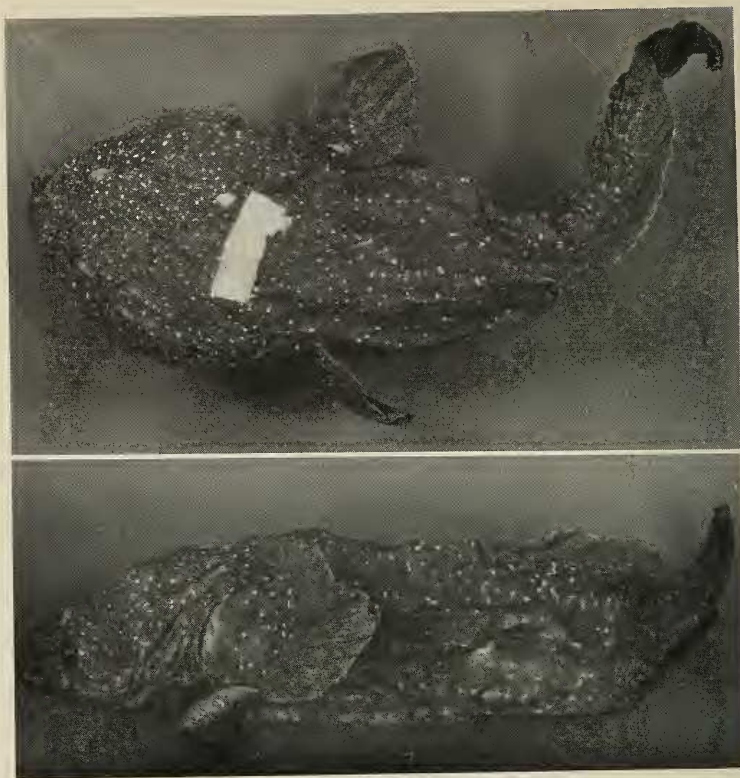


FIG. 1. Dorsal and lateral views of the holotype of *Opsanus astrifer*, USNM 259421-F1, an adult female, 232 mm in standard length, from Turneffe Island, British Honduras. The broad white areas in the dorsal view result from skin having been removed for microscopic study.

The body color of the holotype and largest paratype is dark brown throughout except for the belly, chest and throat. At first glance the brown appears to be uniformly dark but careful examination shows blotching on the side. The underparts are mottled brown and cream color in the holotype and are progressively more uniformly white in the smaller paratypes. The head, body and fin bases are covered with white pimples. These are most densely distributed on the upper surface of the head, most sparsely distributed posteriorly on the body and absent from the distal portions of the fins and from the belly, chest and throat. They are best developed in the holotype. The smaller paratypes lack the pimples but are spotted with white and the smallest retains a blotched color pattern reminiscent of *Opsanus beta*. All fins

TABLE 1. Counts and measurements (in hundredths of standard length) of the type specimens of *Opsanus astrifer* and of the holotype of *Opsanus barbatus*

	<i>O. astrifer</i>					<i>O. barbatus</i>
	USNM 259421- FI	UMML 9415	ANSP 102736			USNM 81009
Standard length (mm)	232.5	73.1	37.0	31.5	24.0	339.0
Head length	38	37	37	36	38	38
Snout tip to anus	58	52	53	49	52	—
Eye diameter	4.8	6.2	9.5	7.6	10.3	4.7
Pectoral-fin length	15	17	19	18	22	—
Pelvic-fin length	17	16	18	21	24	—
Dorsal soft rays	32	31	31	30	31	33
Anal rays	25	25	24	24	—	27
Pectoral rays	22-22	22-22	22-22	22-22	22-22	—
Vertebrae	39	38	39	37	—	39

are blackish-brown except for the pelvics which may be partly pale colored.

The oral cavity is pale, somewhat dusky anteriorly on the floor of the mouth. The gill chamber is pale. The peritoneum is colorless except for melanin along the belly wall in the holotype.

The axillary pore is well developed but there are no glandular canals and openings along the pectoral rays. The lateral-line system is represented by the well-defined rows of sensory papillae on the body, the upper branch containing 32-37 papillae, the lower 34-37. Each papilla is bordered by the cirri which are longer on the anterior part of the body. On the head the papillae are more generally distributed and form well-developed rows of barbels along the fins and on the snout of this well-bearded species. Other papillae are on the body but they do not form organized tracts. On the head the lateral-line system is complex. In addition to well-developed head pores there are other openings from which small buds protrude. While similar structures are found in other species of *Opsanus*, the entire system seems especially advanced in *astrifer*.

The premaxillae bear a single row of small teeth for most of their length; there is a short second row anteriorly. The dentary teeth are larger, single-cuspid with an incisor-like edge and again in a single row except anteriorly where there is a well-developed second and outer row. The vomer and palatine teeth are arranged in a single unbroken U-shaped row of single-cuspid teeth.

Habitat: All specimens of *Opsanus astrifer* were collected at Turneffe Island, which consists of a large atoll-shaped group of smaller keys off the coast of British Honduras. It is encircled by a fringing reef and, beyond

that, by deep water (100 to 400 fathoms). The lagoon is shallow and carpeted with the marsh grass *Thalassia*.

The collection concerned was made just outside the fringing reef about 200 yards ESE of the islet, Cay Bokel. Water depth was about 15 feet and large corals, *Acropora*, *Agaracia* and *Montastrea*, dominated the area. The specimens of the new *Opsanus* were found lying in caverns beneath a large head of *Montastrea* and under the base of a dense stand of *Acropora*. The largest specimen was still alive, but stunned, when collected and bit viciously at a wooden net handle.

Biology: The holotype is a spent female. The ovary is in two portions, the anterior solid portion containing undeveloped ova. An early summer or late spring spawning shows that this species, unlike its northern allies, has adapted to warm-water life. This may also be true for the more southern *barbatus*.

Etymology: The name *astrifer* is from the Latin words meaning star and to bear.

Discussion: *Opsanus astrifer* is closest to *O. barbatus* Meek and Hildebrand. All other Atlantic species (*beta*, *tau*, *pardus*, *phobetron*) have decidedly fewer dorsal and anal rays (see Walters and Robins, 1961: 3, Table 1).

The holotype and only specimen of *O. barbatus* was re-examined. Meristic data are given in Table 1. This large specimen (339 mm in standard length) is larger than the holotype of *astrifer*, yet possesses none of the white spots that earn *astrifer* its name. In addition to the color difference, *barbatus* has more anal (27 vs. 24–25) and dorsal (33 vs. 31–32) soft rays.

Study of a large number of sections of the skin of *astrifer* show that its white spots are associated with glandular structures. The basement pigment layer, very intense in *astrifer*, breaks up into a series of spots at the edge of the section through the white spot and disappears entirely across its center. Study of serial sections shows a pit located centrally in the spot and this pit leads into a larger area of glandular cells below the pigment layer and frequently to one side of it so that a number of sections must be followed to trace it. The white spots of *astrifer* are thus associated with definite dermal structures and not related to any parasite infestation. The function of the structures is unknown at present.

Considering all these differences and the conservative nature of meristic features in *Opsanus*, we describe *astrifer* as a species distinct from *barbatus*.

LITERATURE CITED

- MEEK, SETH AND SAMUEL F. HILDEBRAND. 1928. The marine fishes of Panama. Part III. Publ. Field Mus. Nat. Hist., Zool. ser., 15: xxv-xxx, 709–1045, pls. 72–102.
- WALTERS, VLADIMIR AND C. RICHARD ROBINS. 1961. A new toadfish (Batrachoididae) considered to be a glacial relict in the West Indies. Amer. Mus. Novit., 2047: 1–24. 3 Figs.